

# Paddle Type Flow Switches – For Flow/No-Flow Detection in Large Line Sizes

- ▶ Engineered for positive liquid flow detection at pressures to 2000 PSIG (138 bar)
- ▶ Unique, patented cam design assures low pressure drop and does not require bellows, seals, or mechanical linkages
- ▶ Minimum in-line restriction; paddle pivots to move out of liquid path with increasing flow

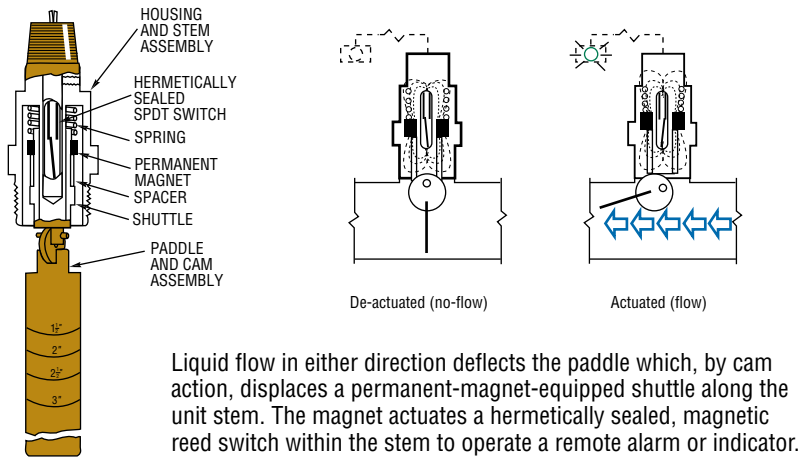
## Typical Applications

- Assure flow and/or leak detection in large, high pressure in...
- Compressors • Heat Exchangers • Turbines • Engines • Boilers • Chillers
- Protect high or low pressure pumps from cavitation, sense critical, reverse flow and protect...
- Valves • Pumps • Regulators

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## Design Data

### General Operating Principle



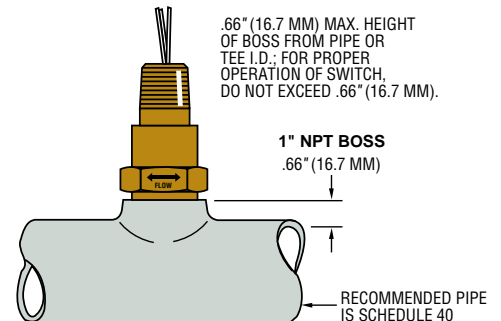
Liquid flow in either direction deflects the paddle which, by cam action, displaces a permanent-magnet-equipped shuttle along the unit stem. The magnet actuates a hermetically sealed, magnetic reed switch within the stem to operate a remote alarm or indicator.

## Simple Installation and Easy Maintenance

Installs in a standard pipe tee or reducing fitting. If excessive particle build-up necessitates occasional cleaning, simply remove the unit and manually remove particles actuate paddle for free movement.

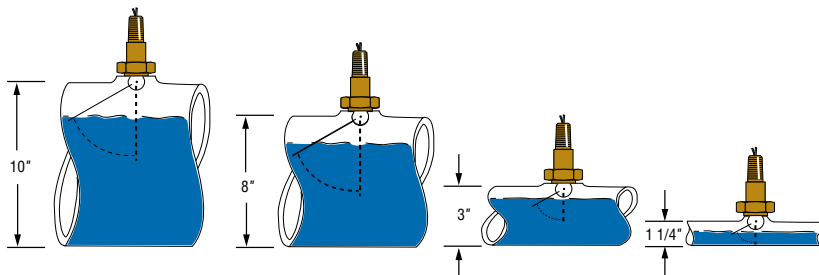
### Easy Installation

Installs in a standard pipe tee or reducing fitting.



## Paddles Cut-to-Length For Broad Range of Pipe Sizes

Cutting the paddle to length selects a standard flow rate as shown on the tables on the following pages. Approximate pipe sizes are marked on the paddle. These units can be used in pipe with diameters greater than the 5" paddle length. They provide flow/no-flow detection where there is a velocity of 0.5 ft. per second.



# FS-550 Series – High Pressure, Metal Paddle Switch

**Pipe Line Size:** 1-1/4" and Up  
**Primary Construction Material:** Stainless Steel or Brass  
**Setting Type:** Fixed

Standard FS-550 switches sense liquid flow in either direction to monitor flow/no-flow conditions. They are supplied in two paddle lengths. The paddle is trimmed during installation to permit switch actuation at the desired flow rate. As flow increases in a pipe, the paddle of the switch pivots to move out of the liquid path, producing less than 3 PSIG of pressure drop regardless of pipe size.

## Specifications

<b>Wetted Materials</b>	
<b>Housing</b>	Brass or 316 Stainless Steel
<b>Paddle</b>	302 Stainless Steel
<b>Spring</b>	316 Stainless Steel
<b>Other Wetted Parts</b>	Ceramic and Teflon®
<b>Operating Pressure, Maximum</b>	2000 PSIG (138 bar)
<b>Pressure Drop</b>	3 PSIG (0.2 bar) Maximum
<b>Operating Temperature</b>	-30°F to + 300°F (-34.4°C to + 148.9°C)
<b>Set Point Accuracy</b>	± 25%
<b>Switch*</b>	SPDT, 20 VA
<b>Repeatability</b>	± 5%
<b>Electrical Termination</b>	No. 18 AWG, 24" L., Polymeric Lead Wires

\* See "Electrical Data" on Page X-5 for more information.

## Standard Actuation and De-actuation Set Points

The Table below indicates paddle lengths which achieve switch actuation for specific flow rates. Approximate pipe line sizes are marked on paddle.

	Pipe Size Marked at Paddle Cut-Off Point	Pipe Line Sizes					
		1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
		Approximate Actuation and (De-Actuation) Flow Rates GPM Water					
<b>Short Paddle Unit</b>	1-1/4"	5 (3)	13 (8)	22 (15)	29 (22)	—	—
<b>Long Paddle Unit</b>	1-1/2"	—	15 (11)	28 (21)	38 (30)	—	—
	2"	—	—	22 (15)	27 (20)	48 (38)	—
	2-1/2"	—	—	—	21 (14)	40 (26)	52 (39)
	3"	—	—	—	—	31 (20)	45 (32)
	4"	—	—	—	—	—	39 (25)

All flow rate tests for the above table were conducted with the switch installed in a standard "T" fitting. For calculation of flow rates in pipe sizes larger than 5", a flow velocity of approximately 0.5 ft. per sec. actuates the switch with a full length (5") paddle. The paddle can be trimmed to achieve different actuation points.

## How To Order – Standard Models

Select switch type, paddle length and housing material, then specify adjacent part number.

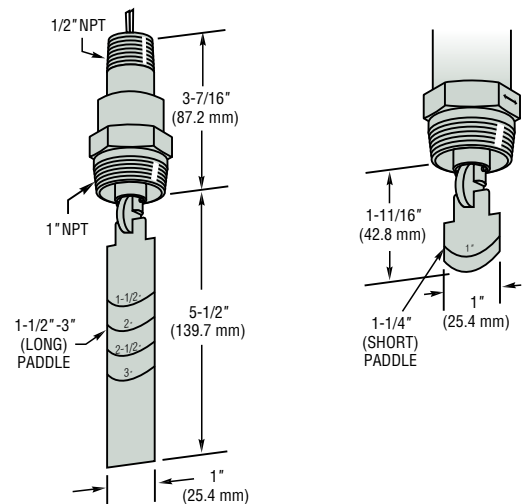
Switch Type	Paddle Length	Housing Material	Switch Operation	Part Numbers	
				Standard	3-Pin J-Box
SPDT Standard Unit	Long	Brass	N.O. or N.C.	29609	56730
		316 S.S.		29608	56729
	Short	Brass		30641	66914
		316 S.S.		30640	61189

Note: The FS-550 Switch is not recommended for use with 1" plastic tees.

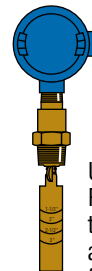


U.L. Recognized  
 File No. E31926  
 CSA Listed —  
 File No. LR30200  
 and LR22666  
 FM Approved —  
 File No. 0A8A3.AE  
 and 1H3A2.AX

## Dimensions



## FS-550 switches are U.L. Approved for Class I, Division 2, Groups A, B, C, D hazardous areas.



They are also available as FM-approved when used with GEMS Junction Boxes which are explosion-proof for Class I, Division 1, Groups B, C, D, E, F, G hazardous locations.

Using GEMS SAFE-PAK Relays and barriers, these switches provide automatic flow/no flow interlock and are intrinsically-safe without explosion-proof housing and piping.

U.L. Approved — File No. E183854

